

CLAIMS

What is claimed is:

1. A guitar interface device, comprising:
 - an interface device input assembly adapted to receive a predetermined number of digital string signals representative of string vibrations of guitar strings mounted on a guitar when the guitar strings are strummed;
 - an interface device processing circuit in communication with the interface device input assembly, the interface device processing circuit adapted to generate a predetermined number of analog string signals based on the digital string signals; and
 - an interface device output assembly in communication with the interface device processing circuit and adapted to output the analog string signals generated by the interface device processing circuit.
2. The guitar interface device of claim 1, wherein the interface device processing circuit is adapted to receive digital string signals formatted to be compatible with a single digital communication protocol.
3. The guitar interface device of claim 1, wherein the interface device processing circuit is adapted to receive digital string signals formatted to be compatible with a MaGIC digital communication protocol.

4. The guitar interface device of claim 1; wherein the interface device processing circuit is adapted to receive digital string signals formatted to be compatible with multiple different digital communication protocols.

5. The guitar interface device of claim 1, wherein the interface device processing circuit is adapted to receive digital string signals formatted to be compatible with a MaGIC digital communication protocol and a Musical Instrument Digital Interface digital communication protocol.

6. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive and transmit a predetermined number of external analog signals to the interface device processing circuit for processing; and

the interface device processing circuit is further adapted to generate a predetermined number of external digital signals based on the external analog signals, to format the external digital signals to be compatible with the predetermined number of digital communication protocols, and to output the external digital signals.

7. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive and transmit a predetermined number of external digital signals to the interface device processing circuit for processing; and

the interface device processing circuit is further adapted to generate a predetermined number of external analog signals based on the external digital signals; and

the interface device output assembly is adapted to output the external analog signals.

8. The guitar interface device of claim 1, wherein:

the interface device control assembly is adapted to receive and transmit a predetermined number of digital control signals to the interface device processing circuit for processing; and

the interface device processing circuit is adapted to use the digital control signals to control the analog signals output by the guitar interface device.

9. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a single digital string signal representative of one or more strummed guitar strings;

the interface device processing circuit is adapted to convert the single digital string signal into a single analog string signal; and

the interface device output assembly is adapted to output the single analog string signal.

10. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a separate digital string signal for each strummed guitar string;

the interface device processing circuit is adapted to convert the separate digital string signals into separate analog string signals; and

the interface device output assembly is adapted to output the separate analog string signals.

11. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a separate digital string signal for each strummed guitar string;

the interface device processing circuit is adapted to process the separate digital string signals to generate a predetermined number of processed digital string signals and to convert the processed digital string signals into processed analog string signals; and

the interface device output assembly is adapted to output the processed analog string signals.

12. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a separate digital string signal for each strummed guitar string;

the interface device processing circuit is adapted to convert the separate digital string signals into separate analog string signals and to process the separate analog string signals to generate a predetermined number of processed analog string signals; and

the interface device output assembly is adapted to output the processed analog string signals.

13. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a separate digital string signal for each strummed guitar string;

the interface device processing circuit is adapted to combine the separate digital string signals to generate a single digital string signal and to convert the single digital string signal into a single analog string signal; and

the interface device output assembly is adapted to output the single analog string signal.

14. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive a separate digital string signal for each strummed guitar string;

the interface device processing circuit is adapted to combine two or more of the separate digital string signals to generate a predetermined number of combined digital string signals and to convert the combined digital string signals into combined analog string signals; and

the interface device output assembly is adapted to output the combined analog string signals.

15. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive two or more separate digital string signals for each strummed guitar string;

the interface device processing circuit is adapted to convert the separate digital string signals for each guitar string into separate analog string signals for each guitar string; and

the interface device output assembly is adapted to output the separate analog string signals for each guitar string.

16. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive two or more separate digital string signals for each strummed guitar string;

the interface device processing circuit is adapted to convert the separate digital string signals for each guitar string into a single combined analog string signal for each guitar string; and

the interface device output assembly is adapted to output the single combined analog string signal for each guitar string.

17. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive two or more separate digital string signals for each strummed guitar string;

the interface device processing circuit is adapted to generate a digital x-plane string signal and a digital y-plane string signal for each guitar string based on the separate digital string signals for each guitar string and to convert the digital x-plane and y-plane string signals for each guitar string into analog x-plane and y-plane string signals for each guitar string; and

the interface output assembly is adapted to output the analog x-plane and y-plane string signals for each guitar string.

18. The guitar interface device of claim 1, wherein:

the interface device input assembly is adapted to receive two or more separate digital string signals for each guitar string that is strummed;

the interface device processing circuit is adapted to

generate a digital x-plane string signal and an digital y-plane string signal for each guitar string based on the separate digital string signals for each guitar string,

combine the digital x-plane and y-plane string signals for each guitar string to generate a single combined digital string signal for each guitar string; and

convert the single combined digital string signal for each guitar string into a single combined analog string signal for each guitar string; and

the interface device output assembly is adapted to output the single combined analog string signal for each guitar string.

19. An interface device processing circuit, comprising:

an interface device formatting circuit adapted to receive a predetermined number of digital string signals formatted to be compatible with a predetermined number of digital communication protocols; and

an interface device converter circuit in communication with the interface device receiving circuit, the interface device converter circuit adapted to generate and output a predetermined number of analog string signals based on the digital string signals.

20. The interface device processing circuit of claim 19, wherein the interface device formatting circuit is adapted to receive digital string signals formatted to be compatible with a single digital communication protocol.

21. The interface device processing circuit of claim 19, wherein the interface device formatting circuit is adapted to receive digital string signals formatted to be compatible with a MaGIC digital communication protocol.

22. The interface device processing circuit of claim 19, wherein the interface device formatting circuit is adapted to receive digital string signals formatted to be compatible with multiple different digital communication protocols.

23. The interface device processing circuit of claim 19, wherein the interface device formatting circuit is adapted to receive digital string signals formatted to be compatible with a MaGIC digital communication protocol and a Musical Instrument Digital Interface digital communication protocol.

24. The interface device processing circuit of claim 19, wherein:

the interface device converter circuit is adapted to receive a predetermined number of external analog signals and to generate a predetermined number of external digital signals based on the external analog signals; and

the interface device formatting circuit is adapted to format the external digital signals to be compatible with the predetermined number of digital communication protocols and to output the external digital signals.

25. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a predetermined number of external digital signals formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to generate a predetermined number of external analog signals based on the external digital signals and to output the external analog signals.

26. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a predetermined number of digital control signals formatted to be compatible with the predetermined number of digital communication protocols; and

the interface device formatting circuit is adapted to use the digital control signals to control the analog signals output by the interface device processing circuit.

27. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a single digital string signal formatted to be compatible with the predetermined number of digital communication protocols; and

the interface device converter circuit is adapted to convert the single digital string signal into a single analog string signal to output the single analog string signal.

28. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a separate digital string signal for each strummed guitar string formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to convert the separate digital string signals into separate analog string signals and to output the separate analog string signals.

29. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a separate digital string signal for each strummed guitar string formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to process the separate digital string signals to generate a predetermined number of processed digital string signals, to convert the processed digital string signals into processed analog string signals, and to output the processed analog string signals.

30. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a separate digital string signal for each strummed guitar string formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to convert the separate digital string signals into separate analog string signals, to process the separate analog string signals to generate a predetermined number of processed analog string signals, and to output the processed analog string signals.

31. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a separate digital string signal for each strummed guitar string formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to combine the separate digital string signals to generate a single digital string signal, to convert the single digital string signal into a single analog string signal, and to output the single analog string signal.

32. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive a separate digital string signal for each strummed guitar string formatted to be compatible with a predetermined number of digital communication protocols;

the interface device converter circuit is adapted to combine two or more of the separate digital string signals to generate a predetermined number of combined digital string signals, to convert the combined digital string signals into combined analog string signals, and to output the combined analog string signals.

33. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive two or more separate digital string signals for each strummed guitar string formatted to be compatible with the predetermined number of digital communication protocols;

the interface device converter circuit is adapted to convert the separate digital string signals for each guitar string into separate analog string signals for each guitar string, and to output the separate analog string signals for each guitar string.

34. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive two or more separate digital string signals for each strummed guitar string formatted to be compatible with a predetermined number of digital communication protocols;

the interface device converter circuit is adapted to convert the separate digital string signals for each guitar string into a single combined analog string

signal for each guitar string, and to output the single combined analog string signal for each guitar string.

35. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive two or more separate digital string signals for each strummed guitar string formatted to be compatible with a predetermined number of digital communication protocols;

the interface device converter circuit is adapted to generate a digital x-plane string signal and a digital y-plane string signal for each guitar string based on the separate digital string signals for each guitar string, to convert the digital x-plane and y-plane string signals for each guitar string into analog x-plane and y-plane string signals for each guitar string, and to output the analog x-plane and y-plane string signals for each guitar string.

36. The interface device processing circuit of claim 19, wherein:

the interface device formatting circuit is adapted to receive two or more separate digital string signals for each guitar string that is strummed formatted to be compatible with a predetermined number of digital communication protocols; and

the interface device converter circuit is adapted to:

generate a digital x-plane string signal and an digital y-plane string signal for each guitar string based on the separate digital string signals for each guitar string;

combine the digital x-plane and y-plane string signals for each guitar string to generate a single combined digital string signal for each guitar string;

convert the single combined digital string signal for each guitar string into a single combined analog string signal for each guitar string; and

output the single combined analog string signal for each guitar string.